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which gave us great trouble. S. of Cape Fullarton we got into open water. On the evening of the 19th calms and head-winds much retarded us, so that we did not enter Churchill River until the morning of the 28th of August; there we were detained all day by a storm of wind. My good interpreter, William Ouligbuck, was landed, and before bidding him farewell I presented him with a very handsomely mounted hunting-knife, intrusted to me by Captain Sir George Back, for his former travelling companion Ouligbuck, but as the old man was dead I took the liberty of giving it to his son as an inducement to future good conduct, should his services be again required.

A three days' run brought us to York Factory, at which place we landed all well on the forenoon of the 31st of August. I am happy to say that the conduct of my men, under circumstances often very trying, was, generally speaking, extremely good and praiseworthy; and although their wages were higher than those of any party who have hitherto been employed on boat expeditions, I thought it advisable, after consulting with chief factor William Mactavish, to give each a small gratuity, varying the amount according to merit.

In conclusion, I have to express my regret that I was unable on this occasion to bring to a successful termination an expedition which I had myself planned and projected, but in extenuation of my failure I may mention that I was met by an accumulation of obstacles beyond the usual ones of storms and rough ice, which my former experience in Arctic travelling had not led me to anticipate.

I have, &c.
(Signed) JOHN RAE, F.R.G.S.

XIX.—*Remarks on a series of three-hourly Meteorological and other Observations made during a Passage from London to Algoa Bay, from July to October,* 1853.* By DR. P. C. SUTHERLAND, F.R G.S.

Read, March 12, 1855.

To the SECRETARY of the Royal Geographical Society.

SIR,—I hope you will excuse the liberty I take in forwarding the accompanying "three-hourly" observations in meteorology, &c., made during the passage of the ship 'Ambassador' from London to Algoa Bay, South Africa. They extend over a period of nearly four months—July, August, September, and October of this year—and embrace the temperature of the air and of the surface of the sea, together with the density of the latter; the variations of the atmospherical pressure; the true directions of the winds and their force; the general features of the weather; and allusions, made as frequently as circumstances permitted, to the countless inhabitants of the parts of the ocean traversed. As the geographical distribution of animals has always, and more especially of late years, met with marked attention from your Society, I doubt not a few observations on this head might prove interesting: such would perhaps be out of place here, as they might anticipate the more extended remarks which Dr. Gray, of the British Museum, or some of his able assistants, may kindly undertake to offer upon the series of collected specimens, the results of the towing-net during the passage, already forwarded to that national institution. It may, however, be proper to observe, that every part of the ocean where the towing-net could be applied satisfactorily, for the purpose of including whatever came into its way, was found to contain crustacea, chiefly of the Entomostracous orders, in considerable abundance. The genus *Cypridina*, of which but little is known, and in some instances supposed to be dredged from depths of sixty to seventy fathoms on the British coasts, was found of large size at the surface of the ocean in both the northern and southern hemispheres, in localities determined astronomically, where Sir J. Clark Ross failed to strike soundings with 2000 fathoms of line. This genus, however, has been found in several parts of the Southern Ocean by Mr. Adams, Assistant Surgeon R.N., and other travellers.* The genus *Anomalocera*, and several other closely allied genera of this widely distributed order, hitherto chiefly confined to the British seas and most northern parts of the North Atlantic, were found extending southward of the Equator—species apparently the same having been taken in the English Channel, the Bay of Biscay, and in 4° to 6° of S. lat., on the 20th to the 25th meridian of W. long. In no part, however, traversed during the passage did this order occur as on the Agulhas Bank, where many thousands of the most beautiful and lively creatures were often found to be included in the net after two or three minutes' towing over the stern of the ship during almost a perfect calm. In the daytime it was remarkable how few of the *Entomostracous* order, or even of any crustacea, were taken up when the net was towed along the surface: when lowered with a weight to a depth of 10 to 20 fathoms the success was much better; but still the numbers taken under the most favourable circumstances during broad daylight were only an infinitesimal fraction of the myriads taken from the surface after nightfall. A few mollusca, the young of the *Argonaut*, several species of *Pteropods*, the beautiful purple Atlantic gasteropod, *Ianthina fragilis*, and a few tetigerous annelides, were taken in much the same proportion by night as by day; and, as might be expected, acaleph forms were also found equally numerous in daylight and after night had set in. This fact, with respect to the habits of marine animals, and the periods at which they resort to the surface of the water, is worthy the notice of naturalists, as it may in some measure account for the paucity of crustacean forms, not unfrequently complained of by several most careful observers.

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* The tables are preserved in the archives of the Society.—ED.

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* Baird's British Entomostraca.

The barometric observations, although made with the aneroid, an instrument deservedly excluded from scientific pursuits, may not be altogether valueless, as the error of the one in my possession was carefully ascertained by the Secretary of the British Meteorological Society.* In the N.E. and on the E. trade-winds, where atmospheric disturbances are unusual, the diurnal variation of the pressure, supposed to depend upon some obscure hygrometric state of the air, is shown, I think, with tolerable accuracy; and in other latitudes in the N. and S. Atlantic, the variations peculiar to atmospheric vicissitudes are indicated equally well.

The thermometric observations may not be unimportant, as they apply to considerable portions of the currents in the N. and S. Atlantic. The errors of the thermometers used were found by comparisons with Negretti and Zambra's patent standard thermometer, the correctness of which was proved by a certificate from Mr. Glaisher.

Before reaching the Equator a decided diminution in the temperature of the water was observed, which, after making all due allowance for the N. declination of the sun at the time, showed that the ship had passed into the Equatorial current; this current being of a temperature comparatively low for a position so near the Equator, owing, I suppose, to its rapid advance from the southward: and after getting into the northern connecting current, which is quite beyond the immediate influence of the tropical winds, the change of the weather in point of severity and coldness became too striking to be passed unheeded. In lat. 35½° and long. 9° E., 400 miles W. of the Cape of Good Hope, during westerly gales, showers of hail continued falling for three or four consecutive days, to the extent of covering the ship's deck. I little expected, except from icebergs, which rarely drift so far northward, that, within 12° of the tropic of Capricorn, the means for testing the freezing and zero points of thermometers could have come from natural resources on the surface of the wide ocean. As we advanced north-eastward in the direction of the Agulhas Bank, the temperature of the sea increased, until, at a distance of 70 miles S. of the Cape of Good Hope, the mean was about 61°, at which it was found to remain, with slight variations arising from clear or cloudy weather, as we moved along the Bank and entered Algoa Bay. Proceeding eastward, close along the land from Cape St. Francis, which is 40 to 50 miles westward of Cape Recife, the promontory on the W. side of this bay, Captain Moore, of the 'Ambassador,' was of the opinion that a slight easterly current must have carried his ship in the direction of Algoa Bay, which he entered earlier than the correctly measured distance between the two capes, and the time occupied in running it down, would warrant. Captain Boxer, of this ship, who has been engaged for a considerable time in the Royal Mail General Screw Steam Company's service along the S. African coast, also says that the current flowing out of the Mozambique Channel, parallel with and close to these shores, loses its force very considerably before it reaches Algoa Bay, to the westward of which its influence is scarcely felt at a distance of 10 to 12 miles from the land. He adds, however, that the force of the current from Natal south-westward, is affected to a great extent by the prevailing direction of the winds, a circumstance which ought always to find a place in the calculations of persons engaged in estimating the position and direction of the currents of the ocean. The neutral testimony of Captain Boxer, and that of a more positive nature from Captain Moore, in my estimation, favour the probability that there is a slight eastward counter-current from Cape Agulhas to East London on the Buffalo River, about long. 27¾°, which carries along the included portion of the coast a body of colder water from the southward than that of the current from the Mozambique Channel. The bays eastward of Cape Agulhas have a spit of fine sand pointing eastward from the promontory on their W. side, which could not possibly exist were the current advancing westward. The Zwartkops, a river which empties itself into Algoa Bay, I am informed by Mr. Gadney, a gentleman of great experience in S. Africa, runs straight out, and deposits its sand and fine detrital matter equally on both sides, thus affording an unexceptionable proof that its water is not deflected by currents to either side. At East London, and thence north-eastward as far as our knowledge of the coast extends, the rivers cut away their *west* bank, and deposit a long bar or spit of sand on the opposite or *east* bank—a circumstance which shows, without much room for doubt, that the prevailing direction of the current on the coast is westward. The temperature of the sea surface off Cape Agulhas, at Algoa Bay and in the vicinity of the Buffalo River, was found to be generally 61° in the month of October; whereas 60 miles north-eastward of the latter locality it was 68°; and 90 miles farther, where the current from N.E. is very strong, it was 72°. This increased warmth of the water with the decrease of the latitude may be accounted for, in some measure, by the increased power of the sun, but not to the above unusual extent: it is therefore necessary to refer its chief cause to the direction of the current, which is well known to be from N.E. to S.W. The low temperature observed at Algoa Bay, and some distance E. and W. of it, may, with equal propriety, be referred to the eastward deflection of a colder current from the southward; which deflection, as has been already observed, may satisfactorily account for the direction of the sand spits on the W. side of the bays. There seem to be some exceedingly anomalous windings in the currents at the Cape of Good Hope, as laid down in hydrographical works, which perplexed Sir James Clark Ross when he rounded that promontory in his Antarctic voyage, and he would have been glad to have examined them more fully, had his important mission farther S. permitted of the necessary delay. His remarks, in offering the observations made at that time, are highly encouraging to all engaged in the same field of physical research: they are not, however, the only encouragement, for your late President observed in the Anniversary Address for this year, at which I had the pleasure and the privilege of being present, "that it would prove worthy of this maritime nation to perform a survey of the currents of the ocean." When this work is undertaken, the temperature of the water, and its minute, in many instances, microscopic inhabitants, will occupy a share of attention scarcely second to any of the chief points under consideration. With such a plea, I need not apologise farther for troubling you with the observations I now have the pleasure to inclose to you. Some of the Fellows of the Society, interested in the researches alluded to, may indulge me with a glance at them, and I remain very faithfully

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* Although this instrument is totally useless at considerable elevations, it is due to its inventor to state, that under such variations of the atmospherical pressure as are common at the sea level, its indications are generally uniform with those of the mercurial barometer, differing, however, in every individual instrument by an error of addition or subtraction, that in the present instance being 0·15 inch of subtraction.

Your much obliged servant,
P. C. SUTHERLAND.

Dr. Norton Shaw.

XX.—*Narrative of a Journey from Cairo to Jerusalem,* viâ *Mount Sinai.* By the late Dr. GEO. A. WALLIN, Professor of Arabic at the University of Helsingfors.

Translated and communicated by Dr. SHAW.

Read, July 12, 1854.

I HAVE now spent several days in Jerusalem, but having received a most disagreeable impression of the Holy City, caused by the rain, cold, and snow, as well as by the inhospitality of its morose inhabitants, I will postpone giving any decided judgment until sunshine and fine weather will allow me to walk about and survey the disorder of the present Zion. You must therefore in the meanwhile be satisfied with some account of occurrences in the Desert and on Mount Sinai. During my eight months' stay in Cairo, after my first